



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 115

IBM System i 570 (4.7 GHz, 4 core)

SPECfp_rate_base2006 = 102

CPU2006 license: 11

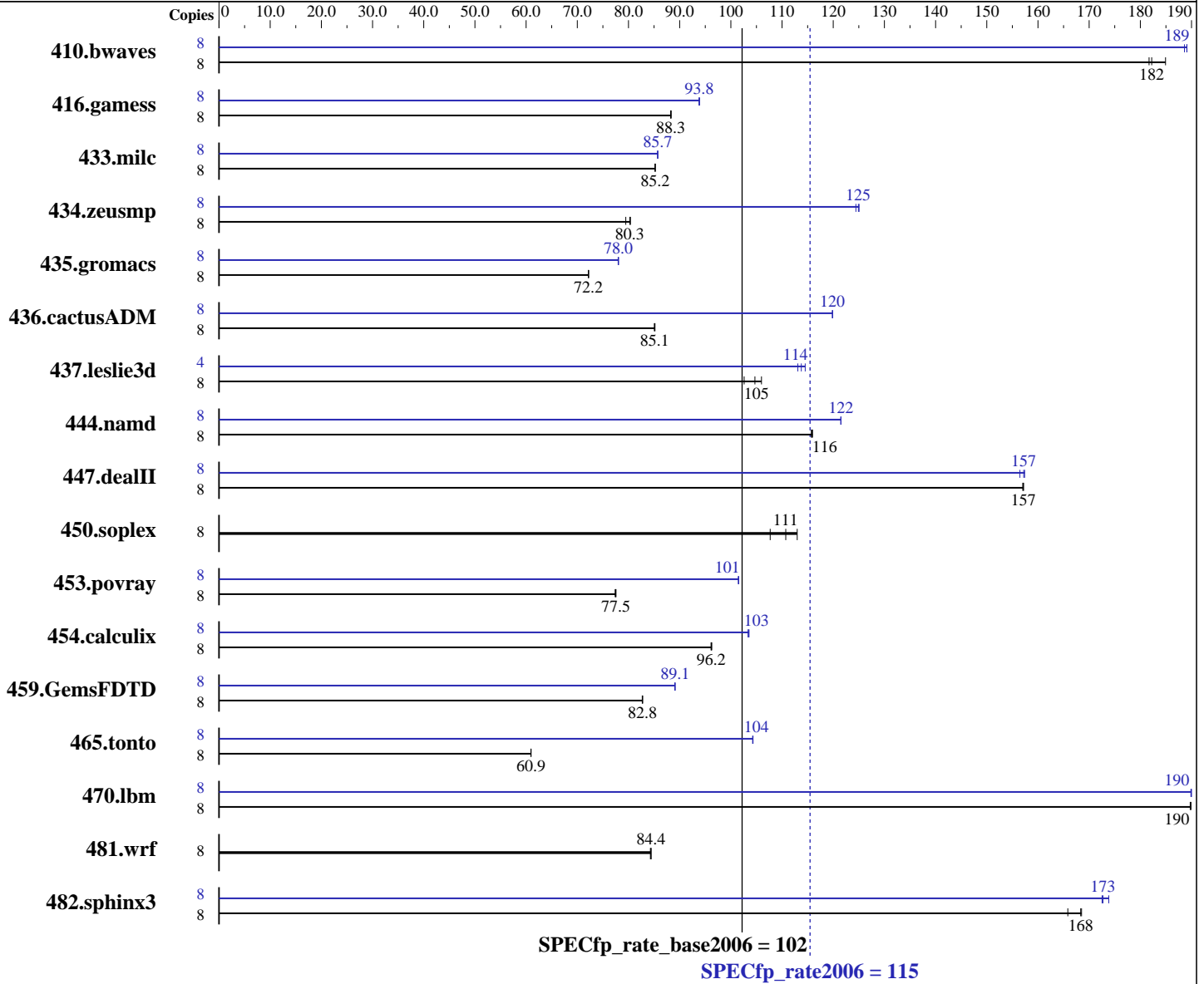
Test date: May-2007

Test sponsor: IBM Corporation

Hardware Availability: Sep-2007

Tested by: IBM Corporation

Software Availability: Jun-2007



Hardware

CPU Name: POWER6
 CPU Characteristics:
 CPU MHz: 4700
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 4,8,12,16 cores
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per core

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Software

Operating System: IBM AIX 5L V5.3
 Compiler: XL C/C++ Enterprise Edition Version 9.0 for AIX
 XL Fortran Enterprise Edition Version 11.1 for AIX
 Auto Parallel: No
 File System: AIX/JFS2
 System State: Multi-user
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit
 Other Software: --



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L3 Cache: 32 MB I+D off chip per chip
 Other Cache: None
 Memory: 32 GB (16x2 GB) DDR2 667 MHz
 Disk Subsystem: 1x73 GB 1x146 GB SAS 15K RPM
 Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	588	185	<u>597</u>	<u>182</u>	598	182	8	<u>575</u>	<u>189</u>	576	189	575	189
416.gamess	8	1773	88.3	<u>1774</u>	<u>88.3</u>	1775	88.2	8	<u>1670</u>	<u>93.8</u>	1668	93.9	1670	93.8
433.milc	8	862	85.2	<u>862</u>	<u>85.2</u>	862	85.2	8	857	85.7	<u>857</u>	<u>85.7</u>	857	85.7
434.zeusmp	8	906	80.4	<u>907</u>	<u>80.3</u>	916	79.5	8	585	124	582	125	<u>583</u>	<u>125</u>
435.gromacs	8	<u>791</u>	<u>72.2</u>	791	72.2	791	72.2	8	<u>732</u>	<u>78.0</u>	732	78.1	732	78.0
436.cactusADM	8	1122	85.2	<u>1124</u>	<u>85.1</u>	1124	85.1	8	<u>798</u>	<u>120</u>	798	120	798	120
437.leslie3d	8	733	103	<u>718</u>	<u>105</u>	710	106	4	328	115	<u>331</u>	<u>114</u>	332	113
444.namd	8	553	116	554	116	<u>554</u>	<u>116</u>	8	<u>528</u>	<u>122</u>	528	121	528	122
447.dealII	8	583	157	582	157	<u>582</u>	<u>157</u>	8	585	156	<u>582</u>	<u>157</u>	581	157
450.soplex	8	591	113	<u>603</u>	<u>111</u>	620	108	8	591	113	<u>603</u>	<u>111</u>	620	108
453.povray	8	<u>549</u>	<u>77.5</u>	549	77.6	550	77.4	8	<u>419</u>	<u>101</u>	419	101	419	102
454.calculix	8	687	96.1	686	96.3	<u>686</u>	<u>96.2</u>	8	639	103	637	104	<u>638</u>	<u>103</u>
459.GemsFDTD	8	<u>1026</u>	<u>82.8</u>	1026	82.8	1027	82.7	8	953	89.1	<u>953</u>	<u>89.1</u>	953	89.1
465.tonto	8	1291	61.0	<u>1292</u>	<u>60.9</u>	1292	60.9	8	755	104	754	104	<u>755</u>	<u>104</u>
470.lbm	8	579	190	<u>579</u>	<u>190</u>	579	190	8	579	190	579	190	<u>579</u>	<u>190</u>
481.wrf	8	1060	84.3	<u>1059</u>	<u>84.4</u>	1059	84.4	8	1060	84.3	<u>1059</u>	<u>84.4</u>	1059	84.4
482.sphinx3	8	940	166	<u>926</u>	<u>168</u>	925	169	8	904	173	897	174	<u>903</u>	<u>173</u>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

AIX 5L V5.3 updated with the 5300-06 Technology Level.

See flags file of details on following settings.

all ulimits set to unlimited

Environment variables set before executing benchmarks:

MALLOCOPTIONS=pool

MEMORY_AFFINITY=MCM

XLFRTEOPTS=intrinthds=1

System set to "Enhanced" mode when defining partition on HMC

1536 16M pages defined on systems with vmo command

fdpr binary optimization tool used for

410.bwaves 434.zeusmp 453.povray 470.lbm 482.sphinx3

submit used to bind benchmark to a processor using "bindprocessor"

The "IBM System p 570" and "IBM System i 570" are electronically equivalent.

The results have been measured on the "IBM System p 570" model.



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Base Compiler Invocation

C benchmarks:

/usr/vac/bin/xlc

C++ benchmarks:

/usr/vacpp/bin/xlC

Fortran benchmarks:

/usr/bin/xlf95

Benchmarks using both Fortran and C:

/usr/vac/bin/xlc /usr/bin/xlf95

Base Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Base Optimization Flags

C benchmarks:

-O5 -qlargepage -D_ILS_MACROS -blpdata

C++ benchmarks:

-O5 -qlargepage -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR
-blpdata

Fortran benchmarks:

-O5 -qlargepage -qsmallstack=dynlenonheap -blpdata

Benchmarks using both Fortran and C:

-O5 -qlargepage -D_ILS_MACROS -qsmallstack=dynlenonheap -blpdata

Base Other Flags

C benchmarks:

-qlanglvl=extc99 -bmaxdata:0x40000000 -qipa=noobject -qipa=threads
-qsuppress=1500-036

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Base Other Flags (Continued)

C++ benchmarks:

-bmaxdata:0x50000000 -qipa=noobject -qipa=threads -qsuppress=1500-036

Fortran benchmarks:

-bmaxdata:0x60000000 -qalias=nostd -qipa=noobject -qsuppress=1500-010
-qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036

Benchmarks using both Fortran and C:

-qlanglvl=extc99 -bmaxdata:0x60000000 -qalias=nostd -qipa=noobject
-qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

Peak Compiler Invocation

C benchmarks:

/usr/vac/bin/xlc

C++ benchmarks:

/usr/vacpp/bin/xlC

Fortran benchmarks:

/usr/bin/xlf95

Benchmarks using both Fortran and C:

/usr/vac/bin/xlc /usr/bin/xlf95

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: -O5 -qlargepage -D_ILS_MACROS -qalign=natural -blpdata

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Peak Optimization Flags (Continued)

470.lbm: -O5 -qlargepage -D_ILS_MACROS -q64 -blpdata

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -blpdata

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -blpdata

447.dealII: -O5 -qlargepage -D_ILS_MACROS -qrtti=all
-D__IBM_FAST_VECTOR -blpdata

450.soplex: basepeak = yes

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -qalign=natural -blpdata

Fortran benchmarks:

410.bwaves: -O5 -qlargepage -qenablevmx -qvecnv1
-qsmallstack=dynlenonheap -blpdata

416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -blpdata

434.zeusmp: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -qxlf90=nosignedzero -blpdata

437.leslie3d: -O5 -qlargepage -q64 -blpdata

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -blpdata

465.tonto: Same as 416.gamess

Benchmarks using both Fortran and C:

435.gromacs: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -blpdata

436.cactusADM: -D_ILS_MACROS -blpdata

454.calculix: -O4 -qlargepage -q64 -D_ILS_MACROS -blpdata

481.wrf: basepeak = yes



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Peak Other Flags

C benchmarks (except as noted below):

-qlanglvl=extc99 -qipa=noobject -qipa=threads -qsuppress=1500-036

433.milc: -qlanglvl=extc99 -bmaxdata:0x40000000 -qipa=noobject
-qipa=threads -qsuppress=1500-036

C++ benchmarks (except as noted below):

-bmaxdata:0x50000000 -qipa=noobject -qipa=threads -qsuppress=1500-036

444.namd: -qipa=noobject -qipa=threads -qsuppress=1500-036

453.povray: -qipa=noobject -qipa=threads -qsuppress=1500-036

Fortran benchmarks (except as noted below):

-bmaxdata:0x50000000 -qipa=noobject -qsuppress=1500-010
-qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036

416.gamess: -bmaxdata:0x40000000 -qalias=nostd -qipa=noobject
-qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

434.zeusmp: -bmaxdata:0x40000000 -qipa=noobject -qsuppress=1500-010
-qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036

437.leslie3d: -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qipa=threads -qsuppress=1500-036

465.tonto: -bmaxdata:0x20000000 -qipa=noobject -qsuppress=1500-010
-qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036

Benchmarks using both Fortran and C (except as noted below):

-qlanglvl=extc99 -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qipa=threads -qsuppress=1500-036

436.cactusADM: -qlanglvl=extc99 -bmaxdata:0x60000000 -qipa=noobject
-qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

481.wrf: -qlanglvl=extc99 -bmaxdata:0x60000000 -qalias=nostd
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qipa=threads -qsuppress=1500-036

The flags file that was used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.12.html

You can also download the XML flags source by saving the following link:

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.12.xml



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